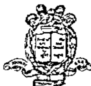
CARDIAC SYMPTOMS IN THE NEUROSES

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THE NEUROSES

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PREFACE TO SECOND EDITION

SINCE the individual papers which made up the First Edition of this small book were published much has been added to the literature on the subject The main reason for this is that we have passed through a second world war and it is in wartime that this syndrome assumes its maximum importance *This is inevitable* since *all* the factors calculated to produce frightened and anxious people are present in a high degree and at the same time there is a premium on the fit and healthy and it becomes essential to have the full and useful services of every man and woman of a reasonable age People subject to this symptom complex do not make good service personnel and it has proved vital to recognize this and to place this type of individual in situations where they will remain well

Despite a further twenty four years experience no good reason has been found for any fundamental alteration in the text it is however felt that to Gallavardin s [11] trepied should be added a fourth major symptom namely exhaustion or excessive fatigue

There is still no agreement as to a suitable title for this symptom complex but effort syndrome is now generally discarded since the symptoms can occur quite independently of effort Wood [33] who in his Goulstonian Lectures has made the most

critical and authoritative contribution to recent literature on this subject favours the title Da Costa's Syndrome Other titles are 'Neurocirculatory Asthenia Irritable Heart and Functional Vascular Disease Despite these distinctive titles Freiberg [9] does not consider this to be a nosological entity, but a moiety of the more general picture of psychoneurosis which in the cases under discussion chances to assume entirely or predominantly the garb of cardiac or circulatory symptoms'

Of the more recent literature an attempt has been made to extract its wisdom and to incorporate this into the original text

D M B

December 1954

CARDIAC SYMPTOMS IN THE NEUROSES

INTRODUCTION

ALTHOUGH the title of this book might lead the reader to expect a wider discussion of all the cardiac symptoms encountered in sufferers from the neuroses my interest has centred on three cardinal symptoms and the size of the book will indicate its limited scope Whereas the symptom complex used to be familiar to the few and that only from the point of view of differential diagnosis from angina pectoris it is now being investigated in all its aspects and a considerable literature is accumulating

The symptoms associated with organic heart disease are clearly defined and few in number Dyspnœa on effort is the most frequent complaint and next to this in order of frequency comes anginal pain There is however a large group of complaints which are frequently interpreted by the patient and at times by the doctor as significant of some disease condition of the heart and vessels but which on analysis prove to be only indirectly related to the cardiovascular system Chief amongst these are the three symptoms which have been termed by Gallavardin[11] le trepied namely left inframammary pain palpitation and sighing breathing One of these three is usually the primary complaint and in

variably remains the primary complaint in recurring attacks but commonly they are found in association and are almost always accompanied by a diffuse array of minor symptoms

These have been my objects First to determine the significance and importance of these three main symptoms studying each separately to decide whether in any association they could be indicative of organic disease or could be safely labelled as cardiac neuroses Secondly if it appeared that any one of the three symptoms could be associated with organic disease then to decide what conditions should be excluded before disregarding the symptom Thirdly to try to evolve a clinical syndrome which would allow cases with no organic basis to be readily recognized and treated

The first symptom of this clinical complex to be studied was left inframammary pain at the sugges tion of Sir John Parkinson [21] who in 1919 described its common association with left scapular pain He provided the hospital facilities for this work and without his help and encouragement it would not have been completed I am indebted to Dr Bradford Hill for advice and help in the statistical section The Editor of *The Lancet* has kindly given permission to incorporate the articles on this subject which appeared in that journal

CHAPTER I

LEFT INFRAMAMMARY PAIN

LEFT inframammary pain has been the subject of discussion controversy and difference of opinion for many years As far back as the middle of last century articles on this condition appeared in the medical journals and in 1864 Martyn[20] described it as one of the most intractable and mysterious nervous affections we have to do with Since then it has been mentioned by many authors more especially under differential diagnosis from angina pectoris yet in spite of this spasmodic interest in the condition it is a subject which has seldom been directly studied with a view to its elucidation Because of the serious significance of pain in this region to the lay and occasionally to the medical mind[16 17] this investigation was undertaken in order to arrive at some estimate of its real meaning and importance and to discuss the prognosis and differential diagnosis

METHOD OF INVESTIGATION

The following investigations were made chiefly on patients attending the National Heart Hospital together with a group seen in private practice

(1) Patients were followed up who were known to have had pronounced left inframammary pain as shown by their hospital records They were re

examined five, ten, even twenty years later, in an endeavour to throw some light on the clinical course prognosis and differential diagnosis of the complaint

(2) A certain number of patients were examined who from week to week presented themselves at the out patient department, giving this pain as their chief symptom in order to obtain an accurate and complete clinical picture

(3) The incidence of the condition in a series of consecutive out patients was investigated by statistical methods

In deciding which patients to accept for this purpose, attention was directed to severity and persistence of the pain and its duration In searching the old records of the hospital for suitable cases all of doubtful diagnosis were excluded Thirty two cases were collected whose records went back over a considerable period of time the longest twenty nine years From the hundreds who had attended primarily with this complaint twenty other illustrative cases were selected for particular investigation and observed weekly or monthly In the statistical investigation consecutive out patient cases during the year 1927 were chosen

From reading the literature on the subject it seemed of primary importance to decide as exactly as possible what was understood by the left inframammary or precordial region The accompanying diagram (Fig 1) shows the areas of hyperæsthesia found in Case 14 and it illustrates the parts under discussion, the areas involved primarily were DV and DVI according to Head's segmental areas[15],

there was some extension above and below and to the subscapular region

The method of examination was as follows —

(a) Routine examination including estimation of blood pressure and testing of urine

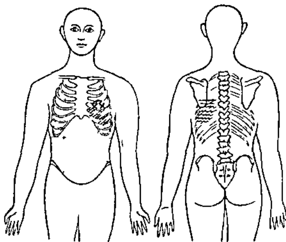


FIG 1 (Case 14) The chief site of pain is indicated by a cross The shaded area is hyperæsthetic

(b) Wassermann reaction, X ray examination electrocardiogram

(c) Testing for hyperæsthesia by the simple method of lightly dragging the head of a pin over the skin This was a method used by Mackenzie and Head [15] Tenderness was then elicited by palpating with the finger tips over the same region The parts examined were the left breast above and below

the nipple and the region about the angle of the left scapula the results were entered on a chart

A Typical Case

To introduce the subject clinically a typical example may be quoted

Case 14 A woman, aged 54, complained of an almost continuous pain under the left breast, frequently also under the left shoulder blade, along with a dull ache in the left arm The pain was always worse after the day's work, in the evening, or in bed at night It began about two years ago as a sensation of soreness and weight, occasionally as a pricking in the left inframammary region At first there were intervals of weeks or months of relief latterly it was almost continuous Other complaints were exhaustion, dyspnœa on exertion, and difficulty in taking a deep breath, palpitation, loss of appetite, and poor sleep She volunteered that the skin below the left breast was often sore, and at times she could not bear her clothing against it

On examination a nervous anxious woman Pulse regular, 72 lying, 80 standing Blood pressure 160/90 *Urine normal Routine examination of cardiovascular system, negative* Radioscopy, nothing abnormal

some tenderness on palpation in both these areas (Fig 1)

Etiology

Sex In civilian practice the condition is more common in women than in men in this series were 43 women and 9 men Cohen [6] gives an estimation of twice as many women as men, White and Jones [31] 3 to 2 in favour of women

Age-incidence Broadly there were two groups younger patients in the late twenties and the thirties, and older patients in the late forties and fifties—that is, in women the years about the menopause In children it was rare and in the elderly uncommon

Build and Temperament This did not appear to be so clearly defined as has been suggested by some observers Patients were either of the thin anxious type or stout and solid , this latter build was seen more frequently in middle aged women The majority, it is true, presented what have been described as nervous stigmata

Rheumatism Six only of the series of 52 gave a history of acute rheumatism and two of these had mitral stenosis , there appeared to be no correlation between the conditions On the other hand, so called rheumatic pains in the middle aged patient were very common

Syphilis The Wassermann reaction which was performed on most cases was always negative

Associated Cardiovascular Disease In this series 14 patients had signs of cardiovascular disease 10 having high blood pressure and 4 mitral stenosis the remaining 38 had no evidence of structural disease In the majority, therefore, the pain was the main feature and no recognizable cardiovascular disease was present statistics on this point are given later

Immediate Causes Though the onset was nearly always gradual and scarcely noticed, pain was occasionally described as starting suddenly

The Symptom

Pain The patient gradually became aware of a discomfort in the region of the left breast in some cases also at the angle of the left scapula The pain was variously described when continuous it was said to be a dull ache a soreness a weight or gnawing pain when intermittent in character it was sharp cutting a prick a stab or a shooting pain It was often said to radiate round the ribs or through to the left scapula The relation to exertion was *indefinite* perhaps it was felt *most commonly* when the patient was tired after exertion it was seldom induced by effort though the constant pain could be accentuated by it it was felt at rest and in bed at night It was very rarely of great severity though in five of the series it was momentarily *sufficiently* bad *to* cause *loss of consciousness* Patients generally agreed that rest improved the symptom whereas work exertion excitement aggravated it yet some would volunteer that they got relief from movement especially those who got the pain at night and could not rest in bed There were seldom the secondary effects such as sweating pallor which are expected *in severe forms of pain* Tenderness of the skin was often a complaint a patient would say that during an exacerbation the pressure of the clothes gave discomfort If the pain had been of long duration the patient would have had *considerable intervals of relief punctuated* by relapses

Associated Symptoms

It is important at this point to realize that the

associated phenomena were most helpful in arriving at a diagnosis Gallavardin has said The general impression left the physician is the extreme diffuseness of the manifestations there are so many things that there are too many Cohen [5] and his associates list forty three separate symptoms com monly encountered in this disorder

Exhaustion Chief among the associated symp toms was excessive fatigue or exhaustion Wood [33] recorded this symptom in 88 per cent of his series Cohen [6] in 91 per cent It was a symptom on which Mackenzie [19] laid stress It was nearly always volunteered by the patient without questioning and was often complained of quite as bitterly as the pain It was independent of work done and was claimed to be quite different from natural fatigue after exertion The patient could be too tired to talk yet able to discuss his or her case at length with anyone who was prepared to listen Exhaustion could be felt at its most intense after a night s rest it was present while the patient lay in bed or re clined in a chair it was in fact unrelieved by rest and in this way behaved in a totally opposite fashion from fatigue induced by physical or mental activity Fatigue is not unpleasant in that relief is felt as a result of rest or relaxation exhaustion by contrast even with the patient at rest is an unpleasant and uncomfortable sensation Recovery from true fatigue is quick given adequate rest exhaustion on the contrary, persists for weeks or months despite complete rest

Wood [33] found that the fasting blood sugar blood

sugar at the end of effort sufficient to induce fatigue and the glucose tolerance curve were normal in these patients and that heat and CO_2 appeared to be eliminated satisfactorily

True Dyspnœa on Effort This in a moderate degree was also a common complaint, as would be expected in the lowered condition of health of which it can be an expression with associated overweight it would be considerable In contrast with exhaustion for instance dyspnœa was seldom mentioned until the routine inquiry was made

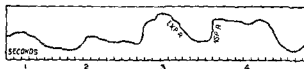


FIG 2 Polygraphic record of sighing respirations. Two normal respirations 1 and 2 followed by two sighing respirations 3 and 4

Deep Sighing Respiration (see polygraphic record in Fig 2) Dyspnœa on exertion should not be confused with this symptom, named "suspirious" breathing by the older writers such as Walshe [27] and fully appreciated by them as a "neurosal" disturbance Modern writers refer to it in such terms as "deep sighing respiration," "inability to take a full breath," "an unsatisfying breath" "irregular sighing respiration" This was a very common symptom in patients with left inframammary pain, notably at rest not on exercise It has been noticed while screening patients during an attack that there appeared to be a spasm of the diaphragm

(A fuller account of this symptom is given in Chapter II)

Palpitation This was a symptom in 60 per cent of patients but not a very prominent one except where there was associated high blood pressure or much tachycardia (This symptom is examined in more detail in Chapter III)

Dyspepsia About 31 per cent of patients com plained of dyspepsia usually in the form of flatulence This was of interest since it was common to hear this type of pain loosely ascribed to indigestion

Pains elsewhere Complaint of pains and stiffness in other parts of the body was elicited from the majority but on questioning only since the pain under the left breast was to the patient by far the most important symptom

Fainting and Faintness Fainting that is actual loss of consciousness was unusual in this condition although the pain was sufficiently severe to cause it in five of the series Feelings of faintness un associated with pain and particularly following exertion often came with the long list of complaints

Insomnia or Disturbed Sleep This was a common complaint and there was generally no reason offered In a few the pain would be the cause they said they didn t know which way to lie and could get relief only from walking about

Nerves It was the rule for these patients to state that my nerves are bad

Giddiness Patients would often say that they were giddy this on enquiry was found to be a sensation of swimminess or floating not true rota

tion the patient felt the ground was unsteady beneath the feet

Trembling and Shaking This was a frequent complaint often said to come in attacks

In this condition where the diffuseness of the symptoms was the outstanding feature the patient did not confine himself or herself to the complaints enumerated above and such phrases as a choking sensation in the throat a feeling of suffocation pins and needles in the limbs will be familiar to everyone Allbutt said referring to left infra mammary pain these faintnesses palpitations gaspings stiflings bodily agitations hyperæsthesias and physical commotions are so wholly unlike the ruthless grip of angina pectoris as these frantic alarms are unlike its silent passion

Physical Signs

Signs were necessarily few as symptoms constituted the essential feature in this condition X ray and electrocardiographic examinations gave results within normal limits the Wassermann reaction when tested was without exception negative and nothing abnormal was found on investigation of the urine

Blood Pressure On first examination this often showed a fairly high systolic reading which seemed to be accounted for by the nervousness of the patient as subsequent readings except where the patient was admittedly suffering from high blood pressure were within normal limits

The Pulse This taken with the patient both standing and lying was found in the majority of cases to be of a moderate rate In this series 25 per cent only had tachycardia which did not appear to be a feature of the condition It is true that on first examination the pulse was often found to be rapid, but this was attributable to the nervousness of the patient, as in the case of the initial blood pressure reading The suggestion that these patients showed an abnormal increase in rate on changing from sitting to the standing position was not confirmed

Hyperæsthesia This proved a valuable sign and was positive in 68 per cent of the series of both old and new cases It was elicited by lightly dragging the head of a pin over the skin the diagrams accompanying the illustrative cases show the usual distribution The left inframammary region was positive to the test more frequently than the left scapular region Tenderness on palpation with the finger tips was found in about 45 per cent

The following are three illustrative cases of long standing left thoracic pain —

CASE 24 A spinster, aged 39 In November, 1920 attended the out patient department of the National Heart Hospital complaining of pain under the left breast when tired it was dull and dragging in character Two weeks previously, while kneeling in church she had been suddenly seized by an exacerbation of the pain and

scapula, and in the left arm, an ache felt during exertion, after exertion and sometimes at rest Other complaints were undue exhaustion, shortness of breath Examination again negative In April, 1929, attended by request She felt better but still had bad pain when tired or sitting at the end of the day, had also had five attacks of pain at night Other complaints were *great exhaustion and difficulty in taking a deep breath*

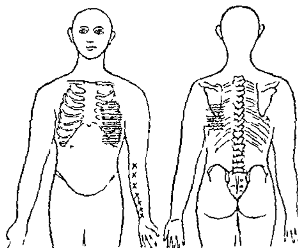


FIG 3 (Case 24) Sites of pain are indicated by a cross The shaded area is hyperæsthetic

Examination a thin, anxious woman Nothing abnormal was found in the cardiovascular system Pulse rate 80 and regular Blood pressure 120/80 Hyperæsthesia to the head of a pin lightly drawn over the skin, and tenderness to palpation with the finger tips (Fig 3)

CASE I A married woman, aged 53 In February, 1915, attended the out patient department of the Heart

Hospital complaining of pain below and above the left breast with a dead feeling down the left arm, it was almost continuous, made worse by exertion and improved by rest in bed Other complaints were palpitation exhaustion, shortness of breath on exertion, loss of appetite, and poor sleep On examination nothing abnormal was found The patient continued to attend

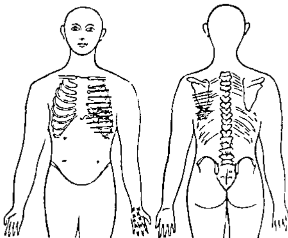


FIG 4 (Case 1) Sites of pain are indicated by a cross shaded areas are hyperæsthetic Feeling of deadness over the dotted area

on and off till 1920, being treated [illegible] ment

again by request She still complained of pain, and now sometimes it was felt under the left shoulder blade Other complaints were undue exhaustion, bad palpitation, flatulence, and a difficulty in taking a deep breath Examination a stout woman of good physique Nothing

abnormal was found in the cardiovascular system Pulse rate 80 and regular Blood pressure 160 95 Hyperæsthesia and tenderness to pressure (Fig 4)

CASE 8 A spinster, aged 32 In March 1920 attended the out patient department of the Heart Hospital *complaining of* pain at the heart it was *continuous* and spread to the left elbow causing a feeling of loss of power in that arm Other complaints were undue

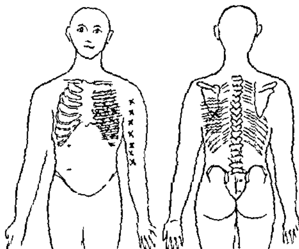


Fig 5 (Case 8) Sites of pain are indicated by a cross shaded areas are hyperæsthetic

the pain was felt at the left scapula and she was unable *to lift her arm to do her hair* In April, 1920 she was again examined nothing abnormal was found and she was reassured and discharged In April 1929 she attended again by request She still complained of the

pain but it was not so severe now as it used to be it was generally sharp and shooting in character shooting round the line of the ribs to the angle of the left scapula Other complaints were great exhaustion severe palpitation nerves bad and a difficulty in taking a satisfactory breath have to take deep sighs Examination thin anxious woman with a continuous coarse tremor of the hands Cardiovascular system normal Hyperæsthesia and tenderness to pressure (Fig 5)

STATISTICS OF A SERIES OF CONSECUTIVE CASES

Out of 332 consecutive cases attending the out patient department of the National Heart Hospital it was found that 42 3 per cent presenting no evidence of cardiovascular disease complained of left inframammary pain whereas only 22 per cent of those with organic disease suffered in this way The statistical significance was that a patient suffering from this type of pain was more (not less) likely to be normal so far as the heart condition was concerned

A further consecutive series of 266 was collected comprising normal patients and those suffering from high blood pressure or mitral stenosis These latter conditions were chosen as representing the commonest cardiovascular diseases It was found that of 43 per cent normal patients 13 per cent gave this pain as their chief complaint and 37 per cent as one of other symptoms of 22 per cent with mitral stenosis 12 5 per cent only gave it as their chief complaint the rest mentioned it among other symptoms Of 33 per cent with high blood pressure 57 per cent gave it as their chief complaint the

others as one of other symptoms The statistical significance of the percentages 43 per cent normal 22 per cent with mitral stenosis and 33 per cent with high blood pressure was the same as for the first series—namely that a patient suffering from this type of pain was more likely to be normal and less likely to be suffering from either high blood pressure or mitral stenosis

TABLE I *Total Cardiovascular Cases*

	Pain	χ^2	P
	Per cent		
Normals	42 3	15 3	0 0015
Cardiacs	22 0	—	—

TABLE II *Mitral Stenosis and Blood Pressure Separately*

	Pain	χ^2	P
	Per cent		
Normals	43 6	—	—
Mitral stenosis	22 0	9 5	0 0236
Blood pressure	33 3	0 8	0 8100

DIAGNOSIS

The diagnosis was based chiefly on the site and type of the pain, with its indefinite onset as opposed to the paroxysmal character of the attacks in angina pectoris and an absence of any direct relation to exertion In addition there was a diffuse array of

symptoms largely of a nervous order and dependent on a lowered condition of general health Further there was an absence of physical signs unless there happened to be associated cardiovascular disease and negative results from electrocardiographic and X ray examinations The presence in the majority of hyperæsthesia and tenderness in the infra mammary and subscapular regions was confirmatory evidence In differential diagnosis it was of first importance to distinguish this condition from true cardiac pain This presented no real difficulty except where there was extension of the pain into the left arm The table on p 20 has been assembled to contrast the two conditions

Mechanism of Inframammary Pain

Wood [33] has come to the conclusion that the pain is not imaginary but has a somatic foundation and that it arises in local muscular or fibrous tissue He considers that it could be due to fatigue or strain of respiratory muscles in cases with respiratory neuroses or to strain of certain muscular attach ments following effort it was predisposed to by poor physique and maintained and exaggerated by the belief that it arose in the heart He found that pain was associated not only with poor phrenic movement but also with poor thoracic expansion He investigated the effects of cutaneous anæsthesia in 5 cases but the pain and tenderness was un influenced in every case On the other hand he found that intramuscular injection at the site of tenderness abolished in 11 patients both pain and

Differential Diagnosis from Angina Pectoris

Angina Pectoris	*Left Inframammary Pain*
1 Commoner in men	1 Commoner in women
2 Occurs during effort or excitement effort is limited by pain	2 Occurs any time especially during fatigue effort is limited by exhaustion rather than pain
3 Pain in brief paroxysms onset and offset abrupt the paramount symptom	3 Pain generally continuous lasting weeks or months with intermissions onset and offset gradual duration indefinite one of many symptoms
4 Site of pain sternal or across the chest extension supramammary or brachial spinal distributions C8 DI 2 3 also 4	4 Site of pain left inframammary extension to left scapula less often supramammary rarely and slightly left brachial spinal distribution DV and VI
5 Aspect expresses great pain	5 No outward aspect of pain
6 Hyperæsthesia none or *only following a paroxysm*	6 Hyperæsthesia common and persistent especially in long standing cases

tenderness when there was an extension of the pain to the left scapula this also was abolished He was able to confirm the observation made by Parkinson [21] that pain at or near the inferior angle of the left scapula never preceded left mammary pain but came either at the same time or subsequently

The suggestion that this pain might be due to the heart itself bumping with undue vigour against the chest wall seems unlikely as it is not a common complaint of patients with hypertrophied hearts which visibly lift the chest wall with each beat

OTHER SOURCES OF PAIN IN THE LEFT INFRAMAMMARY REGION

It is of course recognized that pain under the



Fig 6 Herpes zoster (D VI left) with area of hyperæsthesia to dragged pin head

left breast could be a manifestation of a pathological change in the structures of the chest wall and the organs and tissues other than the heart contained therein When due to a local lesion the clinical picture and course was not that described in these pages and the associated signs and symptoms were absent

Herpes zoster (see Fig 6) could before the appearance of the characteristic eruption give pain under the left breast and at the angle of the left

scapula Again myalgia and myofibrositis of the muscles of the chest wall, sometimes called pleurodynia could give pain in this area

Other conditions that should be mentioned are acute pleurisy recognized by the 'catch' in the breath and associated 'rub' and pyrexia or if the result of chronic pleurisy and fibrosis of the lung, by X ray examination Intercostal neuralgia gives pain along the main distribution of an intercostal nerve Pain due to lesions involving the *lower end of the œsophagus and cardia of the stomach has been* described in detail by Bolton[4] According to Pottenger[23] and others the innervation of the stomach liver and pancreas is from DV and IX, an area including that under discussion—namely DV and VI

Among the rarer causes of left inframammary pain the following may be enumerated mastitis of the left breast osteo arthritis of the spine discussed by Gunter and Sampson[13] disease affecting locally the posterior nerve roots as aneurysm neoplasm or tuberculosis of the spine fracture or periostitis of a rib pneumothorax mediastinitis chronic and acute and intrathoracic neoplasms involving structures of the mediastinum

After Histories and Prognosis

The after histories of the 32 cases whose records went back over a number of years showed that these *patients* had had long *remissions* from their pain but that they had had relapses coinciding in the majority with some illness extra physical or mental

strain or reduced condition of health For the most part they still had the pain at times though in one case only had it got progressively worse The prognosis as to life was good the condition appeared not to be dependent on any underlying cardio vascular disease nor need the patient develop other signs or symptoms over a considerable period of years It did not appear to interfere significantly with the patient s work family or social life The prognosis as to the relief of pain was not so satis factory the trouble was very obstinate as regards treatment and although long periods of relief could be confidently predicted relapses were prone to occur

Summary

1 Left inframammary pain is shown to be a very common symptom in patients without physical sign of disease but with a group of symptoms expressive of physical and nervous exhaustion This condition is found to be far more common in women than in men affecting them in adult life especially at the menopause

2 The pain was of gradual onset and continued for weeks or months with intermissions often over years It could extend to the left scapular region less often to the supramammary region or even to the left arm extension of pain to the left arm was found in 17 of the 32 cases showing long records it could then simulate angina pectoris *with which it had nothing else in common*

3 A striking feature was the association of the

pain with symptoms indicative of nervous disturbances in breathing and with palpitation The most significant sign, indeed almost the *only* physical sign, was the presence of hyperæsthesia of the skin and tenderness of underlying tissues in the region of the left breast and the left scapula

4 *Signs of cardiovascular disease were absent*, except when such common conditions as mitral stenosis and hypertension co existed

5 The distinction from angina pectoris rested upon the character of the pain and its site, the absence of a direct relation to exertion and the lack of supporting physical signs after years of pain

6 The prognosis as to life was good and there appeared to be no organic basis for this condition but it was obstinate and very liable to recur though it did not progress as with angina pectoris

CHAPTER II

SIGHING RESPIRATION

WHILE investigating the significance of left inframammary pain and palpitation, I was struck with the frequency with which patients coming to clinics both at the National Heart Hospital and at two general hospitals complained of a symptom termed by them shortness of breath but which on enquiry was found to be no true dyspnœa but a curious disorder of breathing variously described as "difficulty in taking a deep breath" taking deep sighs," "inability to take a satisfying breath or even "stifling or suffocating turns Further these breaths had for the most part to be taken when at rest, in the evening when tired, or under the stress of excitement as for example, when under the nervous strain of being questioned at the clinic, and not, as so typically with cardiac patients during exertion These encounters led me to take notes on patients showing sighing breathing as a prominent feature, whether or not it was their chief complaint

On turning to the literature I found that this form of breathing was known to the older writers, it was, however, generally held to be significant of a fatty myocardium Walshe[27] (1873) termed it suspirious' and referred to it as a symptom of pseudo angina—" the breathing became panting and suspirious" W T Gairdner[10] (1877) considered it

to be " in some way related to lesions involving the respiration through the cardiac nerves", he also called it 'suspirious respiration In 1929, Paul White and Richard Hahn [30] reported on a study of the symptom of sighing particularly as it concerned cardiovascular diagnosis They found it a common *symptom especially in young women of the third* decade Further statistical analysis showed that it was relatively rare in heart disease with or without *congestive failure, in the absence of effort syndrome* or marked nervousness, and that when present it came from the nervous state and not from the heart They concluded that it was a symptom of nervous origin not dependent on disease of the heart lungs kidneys or thyroid gland In 1933 Gallavardin,[12] in an article on the syndrome of effort in cardio aortic affections, commented on a functional diaphragmatic defect a singular respiratory trouble of a nervous order which had nothing in common with true dyspnœa and manifested itself in repose, being uninfluenced by effort except in very exceptional cases He stated that the clinical context and a precise description of the disorder made diagnosis simple

That it is a common disorder there seems no doubt, not only in patients with left inframammary pain but also *in those* suffering from a nervous disturbance or impaired health yet on enquiry it seemed to be almost unknown and unrecognized in practice, *familiarity with the symptom* did not seem to explain its neglect The importance of its ready recognition, since it was frequently associated with

nervous affections of the cardiovascular system seemed to be threefold First it should be a valuable aid in diagnosis since having established the character of the so called breathlessness it could be accepted as a neurosal disturbance trivial in its significance and a sign of nervous instability and not of organic disease Secondly when as was inevitable it was found in a few cases in association with organic heart disease then as Paul White and Hahn[30] had pointed out It aids much in determining the percentage of responsibility of heart and nervous system in the production of disability in a given case Thirdly this disorder was generally referred to by the patient as shortness of breath a statement which if accepted without further questioning would be misleading and confuse the diagnosis I have therefore attempted to describe the disorder in such a way as to allow of its ready recognition even when it presents itself in its most dramatic form and it can at times assume the aspect of serious disease This paper is founded upon personal observations made during routine hospital and private work

The Symptom

Slight as was the significance of this symptom yet by its character it assumed a grave importance in the mind of the patient and her relatives who even referred to it as a struggle for breath Minor degrees were extremely common and patients would say that from time to time they felt compelled to sigh deeply after which they could breath

freely Others during an attack of this order experience a desire to yawn this if they succeeded in doing would allow them to breathe comfortably and naturally for a time In the few references to it in the literature it was generally termed sighing breathing This did not adequately describe the symptom since this form of breathing was definitely disagreeable in that the end of each inspiration was accompanied by a sense of effort as if against obstruction by patients of a highly nervous temperament it could be described as a feeling of suffocation and such a patient would clutch the arms of her chair in an effort to get a satisfying breath

An intelligent patient would readily distinguish between this type of breathing and her normal dyspnœa of effort which latter could not be described as disagreeable This breathlessness would appear at any time while sitting particularly towards the end of the day when the patient was tired and only occasionally on or immediately after exertion The dyspnœa of effort subsided with rest suspirious breathing however would disappear if the patient s attention was distracted from herself but it would grow more and more troublesome if she concentrated on her discomfort Whereas in heart disease breathlessness was commonly the only complaint suspirious patients frequently complained of multiple symptoms all of a nervous order as exhaustion irritability palpitation tremblings and dizziness The symptom was certainly more common in women than in men and particularly in women between the ages

of twenty and forty I had occasionally observed it in nervous children generally while waiting to be examined The majority of the sufferers were undoubtedly of nervous temperament and frequently were depressed emotional anxious and unhappy No particular build of patient seemed to be affected the symptom being a complaint equally of the stout and the thin The disorder would disappear for weeks months or even years it tended however to re appear with any lowered condition of health or as the result of some anxiety shock or worry

The following four cases present the condition both in its minor and in its more dramatic forms Case 4 illustrates the observation that in the presence of organic disease suspirious breathing aids in determining the comparative responsibility of the heart and nervous system in the production of disability in any given case the attack this patient experienced had clearly no relation to the state of her cardiovascular system

Case Records

Case 1 A married woman aged 33 came to the out

minutes yet she might be free from the symptom for a whole day She stated that she had to force herself to breathe but a yawn would put her right The attacks sometimes troubled her at night in bed otherwise when she sat down tired after some exertion not during exertion

Examination Nothing abnormal was found in the cardiovascular system Pulse regular 80 Blood

pressure 140/80 The patient was reassured and a bromide mixture was ordered

CASE 2 A married woman aged 29 came to the out patient department of the National Heart Hospital complaining of breathlessness This on enquiry was described by her as gasping attacks coming on suddenly at any time She described her sensation as a sudden *feeling that she could not get any air and she would rush out of the house or to an open window taking deep sighing breaths* The attacks lasted from a quarter to one hour, and were followed by trembling and a pain under the left breast Sometimes the attack would surprise her in the night and she would jump out of bed and run into the kitchen her husband well *accustomed to these alarms sleeping undisturbed* Other complaints were palpitations fear of going out of doors disturbed sleep undue exhaustion and irritability

Examination A thin nervous woman who while being questioned took frequent sighing breaths Nothing abnormal was found in the cardiovascular system Pulse rate 76 regular Blood pressure 125 80 X ray showed nothing abnormal in the heart Electrocardiogram physiological Urine normal Wassermann reaction negative This patient improved considerably when she was reassured and given tab luminal gr ½ bis die she felt calmer and slept well Unfortunately however her symptoms returned as the result of the shock of a sudden death in the house where she was staying while on holiday with further treatment she had again improved

CASE 3 A married woman aged 39 came complaining of breathlessness and a pain under the left breast The breathlessness on enquiry was described as " a struggle to get air into the chest a fight for breath a suffocating or strangling feeling which came on whatever she was doing resting or working whether I do anything or not She said she was always yawning even

in the morning when she was not tired and that after a yawn her breathing was easier for a time The pain under the left breast was in the nature of an ache which sometimes spread through to the left shoulder blade the skin on the left side of the chest was often sore Other complaints were great exhaustion, trembling feelings, palpitations dizziness and headache She had had much anxiety of late her husband had been out of work for three years and her children had been ill she could not remember when she had last had a holiday— it was so long ago

Examination A thin anxious woman frequently taking deep sighing breaths but breathing normally when her attention was distracted by questions Nothing abnormal was found on clinical examination Pulse 80 regular Blood pressure 110 65 Urine normal This patient was reassured and a carminative was ordered arrangements were made for a period of convalescence away from her family

CASE 4 A married woman aged 30 had since July 1932, been attending the out patient department of the National Heart Hospital suffering from mitral stenosis

that she could not get a comfortable breath If however, she succeeded in yawning she could then for a time breathe freely Other complaints were irritability, feeling very nervy, poor sleep and getting easily exhausted

On examination the cardiac condition was satisfactory and unchanged The patient was reassured and a bromide mixture was prescribed

ETIOLOGY

The cause of this disorder is obscure it would seem to be in the nature of a spasm, limiting inspira

tion only and therefore the reverse of that observed in asthma Wood [33] noted that the diaphragm failed to relax properly approaching its limit on inspiration but falling far short of it on expiration a fact that suggests that the respiratory muscles are in a state of tonic contraction Gallavardin while screening a patient during an attack observed that there appeared to be a spasm of the diaphragm Haldane Meakins and Priestley [34] while investigating the effect of shallow breathing found that it caused uneven ventilation of the lungs and this in its turn produced anoxæmia and consequently periodic respiration They further found that abdominal or thoracic constriction produced deepening of respiration this suggested a possible association between the spasm of the diaphragm and a restricted air entry which might automatically give rise to efforts to take a deep breath Wood ruled out by chemical studies of blood and urine respiratory alkalosis as a cause of this symptom Wolf [3] discussed situational conflicts with 17 patients while under fluoroscopic observation and noted that tonic contraction of the diaphragm resulted so that deep inspirations were no longer possible

Diagnosis

The diagnosis is based chiefly on the character of the abnormal breathing as described by the patient and if possible as observed a full deep inspiration achieved with effort a slight pause followed by an easy expiration The indefinite onset of the attacks unrelated to exertion the

absence of any change of colour alteration of pulse rate or blood pressure during an attack the freedom from any physical signs except in the few cases where there was associated organic disease should give the clue Added proof is obtained from the negative results from electrocardiographic X ray and other special examinations and in addition there are the accompanying symptoms which are often multiple and all of a nervous kind and dependent on a lowered condition of general health

In a differential diagnosis it is clearly very important to distinguish this disorder from other causes of altered breathing which could be dependent on an organic condition There is also the possibility that incorrect diagnosis would lead to unnecessary treatment a case of suspirious breathing diagnosed elsewhere as asthma was given a course of injections with as might be expected no beneficial results

Many organic diseases can give rise to attacks of dyspnœa as for example cardiac or uræmic asthma Again local obstructions may cause paroxysmal attacks of breathlessness as with an intrathoracic goitre or a mass of glands in the mediastinum The associated signs and symptoms of organic disease should prevent error in diagnosis and a screening or a radiograph should reveal any local cause of obstruction the clinical context and a precise description of the disorder should make the diagnosis simple

PROGNOSIS

The prognosis as to life is good since the condition

is a benign one and of trivial significance Once a patient has suffered from this disorder he or she will always be liable to a recurrence if overtired upset or in a lowered condition of health The symptom is *in the majority of cases occasional only or one* lasting for short periods of time but it should be remembered that it can persist for hours or even days with only brief intervals of relief although any attack however severe or prolonged will cease spontaneously

SUMMARY

1 A disorder of breathing is described which is so common as almost to have passed unnoticed in symptomatology It affects patients without physical signs of disease and is generally associated with a group of symptoms expressive of physical or nervous exhaustion

2 The disorder is frequently described by patients incorrectly as breathlessness The importance is shown of inquiring into the character of the breathlessness as if of the suspirious type it will aid in assessing the part played by the nervous system in whatever condition may be found particularly in those cases where it may happen to be associated with organic disease If however the patient s statement is accepted without enquiry the resulting misinterpretation of the symptom will confuse the diagnosis

3 Degrees in the severity of this symptom from an occasional forced sigh to an attack lasting for hours or even days are illustrated by four typical cases

4 The ætiology is obscure, but it has been suggested that it is associated with a spasm of the diaphragm In support is the fact that the end of each inspiration is achieved with effort as if against some obstruction, and further that constriction of the thorax or the abdomen gives rise to deepening of respiration

5 The absence of any organic basis for the disorder makes prognosis as to life good but the symptom is often resistant to present forms of treatment and is liable to recur with recurrence of nervous stress or ill health

6 All the evidence points to this disorder being a nervous one, and in no circumstances an indication of cardiovascular disease

PALPITATION

The investigation of the symptom of palpitation had two main objects first to determine what the symptom was likely to denote when the patient who gave it as a primary complaint showed on clinical examination no clear evidence of organic heart disease Could it be safely ignored or in view of *its association with* certain *other* conditions *should* these be excluded before the symptom was dis regarded as of no important significance ? Secondly if it appeared that a considerable number of patients with normal cardiovascular systems gave palpita tions *as their complaint to evolve if possible a* clinical syndrome which would allow this type of case to be readily recognized The following con clusions were arrived at by two different methods —a clinical study of patients suffering primarily from palpitation and a statistical survey of a consecutive series of out patients attending the National Hospital for Diseases of the Heart and of a series of children attending three rheumatism super visory centres

Palpitation as a Symptom

At the outset it was essential to find an adequate definition of palpitation and also it was necessary to discover what the patient meant when he or she

complained of this symptom The most satisfactory definition was found in Paul White s book on heart disease [29]

Palpitation (from the Latin *palpitare*—to throb) is the consciousness of the heart s action whether fast or slow regular or irregular it is generally a disagreeable sensation sometimes in a sensitive person it is very distressing The patient s interpretation was by no means so straightforward and a surprising variety of sensations were termed palpitation it was used to describe beating in the chest the throat the heart eyes or ears and sometimes more remotely abdomen fingers and toes or fluttering in the chest a pounding throbbing thudding sensation and in the case of extra systoles the heart would be said to turn over The character of the beat was just as varied and could equally well be frequent or infrequent regular or irregular Not uncommonly a symptom entirely apart from the heart was termed palpitation Clearly it was of first importance to make the patient describe the symptom and not to accept it without question or analysis Sometimes a clue to the nature of the disorder could be gained from the description a continuous palpitation had a different significance from one felt at times a beating which started and ended abruptly was most likely to be a paroxysmal tachycardia and such descriptions as the heart turning over giving a jump or seeming to stop usually indicated extra systoles An interesting point and a problem for the psychologist was the variation in the patient s

consciousness of the heart's action. A patient with a large hypertrophied forcible beating heart could be completely unconscious of the beat and another quite unaware of the presence of a gross irregularity. In great contrast was the patient who with a quiet and regularly beating heart was resentfully and continually aware of its action, for example (Case 3) who said that he felt "pulses all over the place."

Results of Statistical Survey

As a result of a preliminary analysis of the case sheets of 900 consecutive patients attending the out-patient department of the National Hospital for Diseases of the Heart the following facts emerged:—

1. *A considerable number of patients who gave palpitation as a primary symptom had on examination a normal cardiovascular system.*

2. Of those who gave palpitation as their chief complaint and who on examination were found to be suffering from diseases of or disorders affecting the cardiovascular system, the majority were found to be suffering from one of three conditions: (1) Hypertension (only those with systolic pressures of 180 mm. Hg and over were selected). (2) Thyrotoxicosis. (3) Paroxysmal tachycardia.

3. *Very few patients suffering from rheumatic valvular disease gave palpitations as their chief complaint.* Since rheumatic valvular lesions were found on analysis to be the commonest cardiovascular condition met with in hospital practice, this observation seemed of interest.

Other minor points were —

4 Extrasystoles did not appear of necessity to produce the symptom of palpitation many patients seemed quite unconscious of this irregularity when it was present

5 Palpitation was a rare complaint in childhood

A further 1 004 cases were then analysed in order to establish these facts In this second investigation the three conditions hypertension thyrotoxicosis and paroxysmal tachycardia were considered as a group—Group X This grouping was the more satisfactory in that all three represented general conditions with the cardiovascular system secon darily affected not primary cardiovascular disease

As the result of the second analysis it was found that 163 of the 1 004 patients (16 per cent) gave palpitation as their primary complaint Of these 74 (45 4 per cent) were on examination found to be normal and 89 (54 6 per cent) were suffering from some cardiovascular condition it was therefore nearly an even chance that a patient with palpitation as chief symptom would have a normal cardio vascular system Of the 89 abnormal patients 21 (23 6 per cent) had thyrotoxicosis 24 (27 per cent) hypertension and 23 (25 8 per cent) paroxysmal tachycardia It thus was equally likely that the abnormal patient would be suffering from either thyrotoxicosis hypertension or paroxysmal tachy cardia Taken as a whole Group X represented 68 (76 4 per cent) of the abnormal cases Of the remaining 21 (23 6 per cent) 14 (15 7 per cent) had rheumatic valve lesions and 7 (7 9 per cent) some

other condition these were therefore much more likely to have one of the conditions in Group A than rheumatic valve lesions This was demonstrated more impressively when it was found that of 551 patients who had abnormal cardiovascular systems 209 *or nearly* 38 *per cent* had rheumatic valve lesions a big proportion of all cases and 14 (6 7 per cent) of these 209 patients gave palpitation as a primary symptom

It was interesting to find from [illegible]00 *records that of* 28 cases of thyrotoxicosis all but 2 (93 per cent) complained primarily of palpitation of 15 cases of paroxysmal *tachycardia all had palpitation as a primary symptom whereas of 87 cases of hyper* tension only 34 (39 per cent) gave palpitation as their chief symptom

On analysing the cases found to have extra systoles it appeared that an appreciable number of people could have palpitation without extrasystoles and that an equal number had extrasystoles *and were not conscious of the irregularity—that is* the presence of the one did not denote the presence of the other Of the children attending as out patients at the National Hospital for Diseases of the Heart it was found that up to the age of 16 whether they had cardiovascular lesions or not they were very unlikely to complain of consciousness of the heart only 10 (7 2 per cent) *of the* 138 *cases* made this complaint In a series of 1 000 attending rheumatism supervisory centres an even smaller proportion (0 5 per cent) complained of this symptom This apparent discrepancy could be

understood if it was remembered that whatever the age or sex pain took precedence of all other symptoms and that those who came to the supervisory centres generally did so because of rheumatic pains on the contrary the children attending the National Hospital for Diseases of the Heart did so as a rule because of suspected or established heart

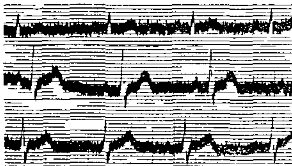


FIG 7 (Case 3) Man aged 19 Pulse rate 73 He described his sensations as a deep thud and said *he felt pulses all over the place* while the tracing was being taken A normal electrocardiogram

disease It seemed therefore that consciousness of the heart's action was chiefly a symptom of adult life

ÆTIOLOGY

From the statistical survey it was clear that thyrotoxicosis hypertension and paroxysmal tachycardia often gave rise to palpitations as a primary symptom Apart from these clinical conditions the explanation of the symptom in a large proportion

of persons with normal cardiovascular systems would have to come from the psychologist since in so many awareness of the heart beat seemed to depend on abnormal sensitivity on the part of the individual

There were however a number of minor causes of palpitation which if appropriately treated would give relief from the symptom

Indigestion Particularly flatulent indigestion and more especially in the stout patient a symptom often worse in the evening and in bed at night and aggravated by physical and mental fatigue

Obesity Frequently in the type associated with the menopause in women and possibly aggravated by the upward displacement of the heart by a high diaphragm

Debility following an Illness Especially in influenza typhoid fever and following a surgical operation

Menopause In these patients in addition to the degree of ill health which might be present at this time there would also be a tendency to obesity and hypertension

Food and Drink More particularly excessive tea drinking coffee alcohol and such foods as peas beans newly baked breads and cakes

Smoking More commonly associated with excessive cigarette smoking and inhalation of the smoke

Fatigue It seemed doubtful whether healthy fatigue could cause palpitation rather was it exhaustion which accompanies nervous and general ill health which was responsible for the symptom

Anxiety Nervous excitement fright mental upset especially in hypersensitive people would be very liable to cause palpitations

Infective Foci As for example infected tonsils or teeth as a result of the accompanying nervous debility and ill health

Illustrative Case

A married woman aged 54 attended the out patient department of the Elizabeth Garrett Anderson Hospital in September 1935 complaining of attacks of palpitation recurring during the last five months Other complaints were difficulty in getting a really good breath pain under the left breast like a knife which shot round to the left shoulder blade a choking sensation in the throat and a feeling that she could not swallow In an attack she would begin to tremble the symptoms would then cease but there followed great weakness and exhaustion She also had a fear of being alone and a difficulty in getting to sleep

On examination she was a well nourished woman pulse rate 72 regular blood pressure 130/75 mm Hg Nothing abnormal in the cardiovascular system urine normal electrocardiogram normal tonsils unhealthy and tonsillar glands enlarged

Diagnosis and Discussion

The clinical complex almost invariably present in patients with a normal cardiovascular system who complained of palpitation should make it possible to distinguish readily this form from that which accompanies hypertension thyrotoxicosis and paroxysmal tachycardia apart from the added clinical signs that would be present in these diseases

When there was doubt it was advisable to have an electrocardiogram taken preferably during an attack since the possibility of paroxysmal fibrillation could not be ignored and it had always to be borne in mind that a patient with organic disease could in addition be prone to nervous symptoms When thyrotoxicosis and hypertension had to be excluded other methods of examination such as the estimation of the basal metabolic rate and the use of the X ray screen and sphygmomanometer should help to determine the etiology

Finally from these investigations it seemed that when palpitation was a symptom of organic disease it was very rarely an indication of any primary disease of the heart and vessels but rather that of a general condition which affected secondarily the cardiovascular system In the rare cases where it was associated with primary heart disease it was usually produced as a result of an alteration in rhythm as for example the onset of auricular fibrillation flutter or far less often of partial or complete heart block

SUMMARY

1 Palpitation can be the main symptom in patients without physical signs of cardiovascular disease and in these cases it is associated with a diffuse array of complaints expressive of physical and nervous exhaustion

2 It can also be a chief complaint in patients suffering from thyrotoxicosis hypertension or paroxysmal tachycardia but the clinical picture is

different and there are the added signs and symptoms associated with these conditions

3 It is rarely the primary complaint of patients suffering from rheumatic valvular disease the commonest heart condition met with in hospital practice

4 The symptom is common in adult life and rarely a complaint of childhood

CHAPTER IV

CONCLUSIONS AND GENERAL MANAGEMENT

It has been found that when either left inframammary pain palpitation or sighing breathing is the chief complaint in a patient who is organically sound it is rarely an isolated symptom the other two of these three symptoms being almost invariably present In addition there is a mixture of general and local manifestations whose particular characteristic is their multiplicity The left inframammary pain is characterized by its gradual onset and its duration which may be weeks or months with intermissions it can extend to the left scapular region and is often accompanied by hyperaesthesia It is commonly either sharp and shooting or dull and aching and has no direct relation to exertion The sighing breathing is definitely disagreeable in that the end of each inspiration is accompanied by a sense of effort as against obstruction difficulty in taking a full breath expiration is easy this symptom also has no direct relation to exertion Other symptoms include exhaustion an exaggerated form of fatigue unaccompanied by a sense of relief and relaxation when resting and entirely unrelated to the degree of exertion undertaken felt at any time equally on getting up in the morning as towards the end of the day The patient may also complain of weakness faintness dizziness disturbed sleep pains in various parts tremblings and other expres

sions of a nervous order These patients may have long remissions from their symptoms but they are liable to relapses coinciding in the majority with some illness extra physical or mental strain or reduced condition of health In these remissions the most prominent symptom does not vary it is constant , the other symptoms, even when they are the other two of the triad assume positions of less importance

In presenting this clinical complex it is not suggested that a careful and thorough physical examination is unnecessary It is not the privilege of the neurotic to be immune from organic disease but such may be the clamour of the multiple symptoms that the presence of real illness particularly if it develops during a long acquaintance with the patient, could easily be overlooked Similarly a patient with organic disease could well be neurotic and the wise assessment of his or her symptoms is important if unnecessary invalidism is to be avoided Paul White[29] has said that even when heart disease is present these nervous symptoms aid much in determining the percentage of responsibility of heart and nervous system in the production of disability in a given case" In any doubt these patients should be referred for the opinion of a cardiologist, Parkinson[22] has said "The fear that a thorough examination will harm by starting the idea of heart disease is unworthy and unwarranted, but morbid ideas may be bred by routine or superfluous examinations, especially when prolonged residence in a hospital is improperly permitted '

Each patient presents a separate problem and needs individual consideration this they deserve for their symptoms are not imaginary and should not be treated as such

As in all nervous disorders reassurance both of the patient and his or her relatives is of prime importance and if accepted often leads to satisfactory results An attempt should be made to discover how the patient may hope subconsciously to benefit from ill health and in this connection good results are claimed from psychiatry Gaskain considers that the causative factors embrace a wide range of economic social marital and psycho sexual components and advises partial analysis in certain types of case Wood[33] considers all patients suffering from this symptom complex to be psycho neurotic and the patient must be induced to believe that he is suffering from the effects of emotional disturbance and not from any disease or alteration of visceral function

Physical rehabilitation as a form of treatment is unrewarding This has been discussed by Sir Adolf Abrahams[1] and similar conclusions were reached by Tegner and Baker[3] as a result of observing the response of men suffering from this syndrome to training at an Army Physical Development Centre

There is no place in the treatment of this condition for the use of drugs other than the simplest sedatives Similarly any local treatment such as plasters injections etc should be avoided as they tend to concentrate the patient s mind on the disability Where the syndrome is induced by a lowered con

dition of health mental strain overwork and chronic worry some attempt must be made to help the patient to a better state of health or to adjust n m self to his circumstances

This is a symptom complex punctuated by re missions and exacerbations the basic mechanism of which has not yet been elucidated As Reich [4] has said It tends to plague both pat ent and l ctor unless patience skill and tact are employed in its recognition and proper management Th s syndrome is of great s gnificance to the cardiologist is more than half the patients who consult him are suffering unnecessary anxiety about their hearts

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